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ABSTRACT

For 3 years, the Diagnostic and Evaluative Procedures course of an education college was offered by electronic mail as well as by a more traditional "chalk and talk" approach, enabling a comparison of the two approaches. In the electronic setting, papers were submitted and questions asked and answered electronically. In the traditional class, students were expected to attend and listen to prepared lectures or participate in class discussions or activities. For this evaluation , there were 78 participants in the electronic classes and 65 in the traditional classes. Both groups were pretested and posttested to assess knowledge of course content. No significant differences in knowledge gain were found between the classes, suggesting that it is possible to conduct the class electronically without loss of academic performance. Attachments include the description of the course, an evaluation survey, and analysis of co-variance results. (Contains 26 references.) (Author/SLD)

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ED 415 269

Evaluation by Electronic Mail

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Mid-South Educational Research Association

Annual Meeting

November 13, 1997

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Abstract

For three years the Diagnostic and Evaluative Procedures course was offered by electronic mail as well as by a more traditional "chalk and talk" approach, enabling a comparison of the two approaches. In the electronic setting, papers were submitted, and questions asked and answered electronically. In the traditional class, students were expected to attend and listen to prepared lectures or participate in class discussions or activities. Both groups were pretested and posttested to assess knowledge of course content. No significant differences in knowledge gain were found between the classes, suggesting that it is possible to conduct the class electronically without loss of academic performance.

Evaluation by Electronic Mail

Internet usage is growing rapidly, estimated to be in the tens of millions of users (Miller, 1996). It should come as no surprise then, that businesspeople as well as educators have joined in offering electronic courses (Buettner and de Moll, 1996; Flatley, 1996; Kelly, 1996; Nantz and Drexel, 1995; Warschauer, 1995). This use of electronic connections for academic pursuits has opened a new era in education, providing the opportunity for teachers to work with students both near and far as well as at many levels, ranging from elementary school (Martinelli-Zaun, 1993; Partridge, 1995; Weaver, 1995) to high school (Barr, 1994; Partridge, 1995) and college (Wilson and Marsh, 1995).

Advantages

Garside (1996) noted the impact of electronic mail (e-mail) on the improvement of communication skills, as well as convenience and cost effectiveness. Barr (1994), Gabriel (1983), and Pitt (1996) wrote of the opportunity to interact with students individually. The casual nature of e-mail (Kinkead, 1987) breaks down barriers among classrooms, students, and teachers (Brienne and Goldman, 1990). Although McIntyre and Thusty (1995) found no direct evidence that e-mail provided an effective measure of reflection, Brienne and Goldman (1990) reported that electronic mail can contribute to students' critical thinking. As students analyze their data and communicate with others, they are exposed to new opinions and have to think critically about their own and others' analyses. Deal (1995) pointed to students' synthesized learning and increased self-assessment skills, as well as a better understanding of the students' concerns, by the teacher. Electronic mail has also changed some students' perceptions of themselves. Newman (1989) reported that her students' self-esteem improved because of the interest other students showed in their work.

Disadvantages

Not all electronic mail experiences are positive. For example, Newman (1989, p.792) wrote that students sometimes found it difficult to write to strangers. Also, some found it difficult to set aside time to use university computers. Sometimes it is difficult for the teacher as well as for students (Weaver, 1995). As one teacher stated, she felt like she was in over her head (Newman, 1989). Setting up the equipment was frustrating, particularly when technical support was unavailable. Even when it was available, there still could be limited access and unreliabile equipment (Garside, 1996).

Learning to use the software can also be disconcerting, sometimes requiring extensive training and support (Fine, 1991). Honey and McMillan (1993) noted that learning to use the network requires an intensive investment in time, which few teachers have available. Harris (1993) reported that students also spend a large amount of time, sometimes 6-10 hours per week working on-line to complete assignments.

Technology also requires a significant financial investment (Fine, 1991). Gabriel (1983) found that it could also be difficult to measure students' gains from using electronic technology. In addition, he and Garside (1996) noted teacher and user resistance to the use of technology since not everyone wants to work electronically. Finally, Barr (1994) wrote that critics have argued that the focus of electronic mail projects tends to be on the process rather than the content. As a consequence, many questions and answers may tend to be superficial.

The Electronic Class

Despite the possible drawbacks, flexibility for students was an important motivation for offering the diagnostic and evaluative procedures course by electronic mail. The students, nearly all senior elementary education majors who were in their preprofessional teaching semester, spent mornings teaching off campus before returning to the university for class. The physical and psychological drain of teaching under supervision for a half-day followed by a return trip to campus for a two-hour class provided a good opportunity for a non-campus approach.

On an experimental basis, the electronic course was first offered in the Fall of 1994 to 13 volunteers out of 49 students who had enrolled in the two class sections of the course. The other 36 students opted for the more traditional "talk and chalk" format with multiple choice tests, taught during the same time slot but by a different instructor. The course has since been regularly offered in the Spring and Fall semesters, with the Spring, 1996, semester being the most recently completed. There were 78 participants in the electronic classes and 65 in the traditional classes. Most of the students in both classes were young white females in their senior year of the elementary education program.

The abilities of the e-mail students ranged from "newbies" to computer literate, and from computer non-owners to owners. The neophytes necessarily required more technical support than the others, but once communication was established, the students' confidence grew quickly. The students who did not own or have easy access to computers were able to use those in university PC or MacIntosh labs, making it possible for them to use either platform to communicate.

Electronic course requirements (See syllabus following the references.) included reading the 10-chapter text (Gronlund, 1993) and writing responses to each of the chapter objectives. Although students could type their responses directly during real time, most preferred to type them into a word processing document, save them to disk, and then send the files when convenient. Students were able to post messages, questions, assignments, and other communications at any time although they were not limited exclusively to e-mail; they were allowed to call the instructor at home or at work, or to visit when on campus. Few students availed themselves of these opportunities, preferring instead to work at a distance. The electronic mailbox was checked regularly so that students would receive prompt replies.

Another requirement of the class, which in later semesters was made an option, was a research paper on an assessment topic of the student's choice. After receiving approval for the topic, students could visit the library, conduct the research, and then submit the document over e-mail. One project (later two) was also required. Several options were provided, but most of the students chose to prepare tests. Other students chose to survey practicing teachers using an instrument provided by the instructor. While the tests, checklists, or scales were sent over e-mail, the completed survey forms were simply dropped off on campus to save typing them into a word processing document. Tests were taken in a computer lab in the education building to maintain security. Students were given up to five attempts on a multiple-choice test of 20 questions, each set being randomly drawn from a large pool. The highest score obtained was counted as the student's final exam grade.

Findings and Conclusion

To determine whether the students in the electronic class were performing comparably with students in the traditional course, pretests and posttests were given, similar in format to the regular tests administered to both groups for their course grades. An analysis of covariance (ANCOVA) was run on the scores using the posttest scores as the response variable and the pretest scores as the covariate. Since the ANCOVA technique involves features of both the analysis of variance and regression, assumptions for

both were tested using the NCSS statistical program, version 6.0.21 (Hintze, 1996). The assumption of random selection is not practical for most courses, but the two groups were comparable for all practical purposes. Normality and homoscedasticity across all groups was verified using the Omnibus Normality of Residuals and Modified-Levene Equal-Variance tests. Homogeneity of regression was observed in a scatterplot of both pretests and posttests and their trend lines. Therefore, the assumptions required for ANCOVA seemed to be reasonably well met.

The test indicated that the null hypothesis of no statistically significant difference between the traditional (adjusted mean of 13.0, n=65) and electronic (adjusted mean of 13.5, n=78) classes' scores could not be rejected at the 0.05 level ($p=0.24$). It is concluded, then, that offering the course through electronic mail did not appear to hinder the performance of the students, to the extent measured by the multiple-choice tests, suggesting that the electronic course offering provided a flexible alternative for learning, possibly with some nonacademic advantages over the traditional approach. The posttest performance was comparable to the traditional offering, suggesting that the electronic approach is not only viable, but may even be preferable.

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UNIVERSITY OF ARKANSAS AT LITTLE ROCK
College of Education
Department of Educational Leadership
(revised 1/13/96)

I.	Course Prefix and Number	EDFN 4205
II.	Course Title	Diagnostic and evaluative procedures in education
III.	Credit	2 hours
IV.	Semester and Year	Spring, 1996
V.	Instructor	Rob Kennedy, Ph.D., Associate Professor of Educational Foundations
VI.	Office Location	Larson 204B
VII.	Office Hours	By appointment
VIII.	Telephone	569-xxxx (UALR), 327-xxxx (home), RLKENNEDY@xxxx.xxx (e-mail)

IX. Course Description

A study of fundamental statistical concepts and their use in understanding standardized test results. Emphasis on the exploration of qualitative methods and evaluating and reporting progress.

X. Course Objectives

Survey practicing public elementary school teachers for their views on important issues and content in assessment.

Plan and construct tests/questions appropriate for the grade levels for which you will be certified.

Calculate grades and other measurements.

Investigate current and anticipated trends in assessment, including performance-based assessment involving portfolios and performance events.

XI. Texts, Readings, and Instructional Resources

Required Text

Gronlund, N. E. (1993). How to Make Achievement Tests and Assessments (5th ed.). Boston: Allyn and Bacon.

XII. Assignments, Evaluation Procedures, and Grading Policy

Course Requirements

Students who demonstrate a commitment to the course through attendance, participation, reading, studying, and otherwise applying themselves to the course will benefit in direct proportion to that effort. In other words, "You get out of it what you put into it."

Note that attendance is required the first two class meetings and the last class meeting (April 29th). Your presence is needed and will be counted as part of your grade, so please make every effort to attend the last day.

Evaluation Techniques/Concepts used for Grading

Final examination (50%)
Homework (10%)
Projects (2 @ 10% each)
Regular communication (10%)
Attendance and completion of in-class exercises April 29th (10%)

Final examination (50%)

The final examination will be over the entire course. The exam is a computer test which will be taken in the computer lab in Larson Hall. You will be able to take the test a maximum of five times, with your highest score counted. You may take the test less than five times, but your highest score will still be the one counted. The test will be multiple-choice, closed book, and from material in the text. You may take the test whenever you are ready, but remember that it is comprehensive, so you may wish to wait until you have studied all of the content before using more than one of your five tries. You will be able to continue your trials through Monday, May 3, 1995. Note: Based on the experiences of numerous students, spreading out the testing after you are ready is generally more effective than taking multiple runs of the test at one time. Do NOT try to take all five runs in one day. This has not been a successful strategy.

Homework (10%)

You will be expected to complete the objectives specified in each of the 10 chapters in the text for the course. As you complete each chapter, you will submit your responses electronically. You will receive full credit on each assignment unless I note that you should make corrections or redo it. Even in those circumstances, you will still receive full credit when acceptable revisions are made.

Projects (20%)

You will need to select and complete two projects from the list below. Your completed projects will be submitted electronically.

1) Review examples of tests, checklists, scales, and/or portfolios. Then develop either a typed test, checklist, scale, or portfolio, including objectives, depending on your interest.

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2) Survey 5 practicing elementary school teachers for their views on important issues and content in assessment. The survey instrument is included in this outline. Responses to the surveys may be handwritten. You do NOT need to submit the surveys electronically.

3) A research paper is included as an option for a number of reasons. A research paper provides you with the opportunity to pursue an area of your interest (relative to the class topics) which otherwise may receive less attention than you deem warranted, due to the time constraints of the course. In addition, research skills will enable you to continue studying independently as a life-long learner. Also, it is worthwhile to demonstrate your ability to sift through the vast array of published literature, to ferret out the gems of wisdom, and be able to communicate the findings to others. The paper needs to be a minimum of 2-3 typed pages in length, including a list of at least five references. APA and MLA styles are acceptable as well as any other consistent and neatly presented format. The research paper may also be submitted electronically.

   Some research paper ideas other students have researched:

   Portfolio Assessment
   Bias in Testing
   Assessment for the Hispanic ESL Learner
   Norm-Referenced Testing vs. Criterion-Referenced Testing: Rank vs. Skill
   Test Anxiety: What Can be Done About It?
   An Overview of Assessment in Adult Education
   Issues in Formative Assessment
   Achievement Tests and Alternatives
   Assessment and Evaluation of the Affective Domain in Education
   A Brief Review of the Reliability and Validity of the Myers-Briggs Type Indicator
   Attention Deficit Disorder and Attention Deficit Disorder with Hyperactivity and its Role in the Classroom
   Alternatives in Language Arts Assessment
   In Search of Meaningful Reading Assessments
   Performance Assessment: Completing the Proficiency Picture
   Literacy Portfolios: What Exactly are They? How Effective Will They be for Assessment?
   Reading Difficulties: Diagnosis and Instruction
   Standardized Testing: Helpful? . . . Or Harmful?
   Reading Disabilities and Providing Instruction
   Assessment in the Literacy-Based Classroom
   Diagnosing Reading Difficulties
   Whole Language Assessment
   Signs and Symptoms of Attention Deficit Disorder
   Alternative Assessments
   Performance Assessments: An Educational Fad or Here to Stay?

4) Create a page similar to one of the last several pages of this syllabus in which you explain to future students how to use a word processing program or a different interface between your computer and the internet. Be sure to have someone else try out your set of steps to be sure that they work correctly. If you discover any errors in the checklists at the end of this document, please let me know so they can be corrected.

Some checklist ideas other students have developed:

Saving tests for e-mail using WP
How to use MS-DOS Shell Word Processing
Using the Apple IIe Network
Word Processing with AppleWorks
Checklist on returning an e-mail message
AOL installation
Using Spell-Check on WP6
To Use WordPerfect 2.0 or 2.1 on the MAC
How to access e-mail from the VAX
To use WP6/Win 95 on IBM
Checklist for sending and receiving files
To use Microsoft Word on the MAC

Regular communication (10%)

To encourage you to regularly participate in class activities, you will be expected to submit some work weekly, except in emergencies. The rationale for this is that, unfortunately, some students tend to procrastinate on their assignments and eventually find themselves cramming in a lot of work in a short time, to the detriment of their learning. I want to help you learn, so I am requiring that you make this effort. Note that turning in a chapter assignment or other work every week is a minimum; it is not necessarily sufficient for you to complete the course on schedule. You may need to submit more work some weeks in order to finish on time.

Additionally, it is important that you regularly read your electronic mail. Although points will not be assigned for this responsibility, your electronic mail will likely be the most common means for communication between you and me. I suggest that you check in at least once a week to see if you have any mail. You will know immediately after logging in whether you have any new mail or not, so it will require only a small amount of time to find out. You will also feel more a part of the class, particularly if you leave mail regularly as well.

Attendance and completion of in-class exercises April 29th (10%)

There are a few follow-up evaluative exercises which you will need to be available for at the end of the course. It is very important that you contribute to the course in this way. These functions are important enough for evaluation and research purposes to assign them 10% of the credit to be awarded in the class. Please plan to participate.

Grading Scale

90-100	A
80-89	B
70-79	C
60-69	D
Below 60	F

XIII. Class Policies

Any of the assignments may be returned to you to be revised or redone if they are deemed unacceptable by the instructor. The normal reason that papers are returned for being unacceptable is the student's lack of following directions. The directions given are minimized to allow you the freedom to be creative and to use and develop critical thinking skills, but the directions which ARE provided should be followed. The purpose of the assignments is to encourage growth in your thinking and understanding of the area of assessment, which is rapidly changing as accountability becomes more and more of an issue. An example of inadequate work concerns test construction. Some students have listed only a series of questions as a test. While a student who had not had this course might think that a test consists only of questions, those questions out of context have little or no meaning. For the purposes of this class, it will be necessary to provide an assessment environment for your test, including a list of your objectives. An assessment of your test items will be much more accurate if their purposes are clear.

XIV. Class Schedule

The dates suggested here are to help you in completing your assignments in a timely fashion. It will be to your advantage (as well as being required) to REGULARLY submit assignments. Although some students have unfortunately demonstrated that the course activities can be crammed into a short time frame, test results have suggested that learning of course information is damaged in the process.

January 15	Introduction, overview of course
January 22	Computer Lab presentation
January 29	Achievement testing and instruction
February 5	Planning the test
February 12	Writing selection items: multiple choice
February 19	Writing selection items: true-false
February 26	Writing selection items: matching
March 4	Writing supply items: short-answer
March 11	Writing supply items: essay
March 18	Assembling, administering, and evaluating the test
March 25	Making performance assessments
April 1	Interpreting test results
April 8	Assigning grades
April 15	Validity
April 22	Reliability
April 29	Concluding exercises--Attendance required!
May 3	Official final exam date (1:30-3:30 pm)
	ALL WORK AND TESTS MUST BE COMPLETED AND SUBMITTED BY THIS DATE.

Student_____

EDFN 4205 Teacher Survey
Diagnostic and Evaluative Procedures in Education

I have been asked by one of my instructors at UALR to survey practicing public elementary school teachers for their opinions, from the practitioner's standpoint, about the content which should be taught in the Diagnostic and Evaluative Procedures in Education course. Would you be willing to participate in this survey, if you have not already? Your name will not be used [and should not be written on this form]. (If the response is no, you will need to find another teacher. If the response is yes, please write down the district employing the teacher and the grade level(s) taught.)

District _____ Grade Level(s): _____

Would you please respond to the following questions to the best of your knowledge and experience. We are trying to gather information to make the assessment class as realistic and meaningful as possible. If you have any additional comments you wish to make, feel free to add them at any time. List any comments to the right or on the back, indicating to which item the comments belong. Be sure that you can explain what each of these items is (See Tuckman if you are unsure.)

1. Do you write behavioral objectives as part of your planning for tests?

2. Do you use Bloom's Taxonomy as part of your planning for tests?

3. Do you write content outlines as part of your planning for tests?

4. Do you write test-item specifications as part of your planning for tests?

5. Which short-answer test-item types do you use in testing?:

   a. unstructured (can be answered by a word, phrase, or number)

   b. completion (fill in an omitted word or phrase)

   c. true-false (yes-no)

   d. two-choice classification

   e. multiple choice

   f. matching

6. Do you use essay-type test items in testing?

7. Do you use performance-type tests?

   If so, what kinds (eg., writing, dramatic presentations, science projects, portfolios)?

8. What means, if any, do you use to insure that your tests have content validity?

9. What means, if any, do you use to build reliability into your tests?

10. Do you use standardized tests?

11. What types of test items (eg., unstructured, completion, true-false, two-choice, multiple choice, matching, essay) do you most frequently use on your teacher-made tests?

12. a. How are norm-referenced tests, like the Stanford, useful?

    b. What are their drawbacks?

13. a. How are criterion-referenced tests, like the MPT, useful?

    b. What are their drawbacks?

14. What types of standard scores do you use or have need to be able to interpret?

    a. z-scores

    b. T-scores

    c. CEEB scores

    d. AGCT scores

15. Do you need to be able to interpret stanine scores?

16. Do you need to be able to interpret percentile ranks?

17. Do you need to be able to interpret grade-equivalent scores?

18. Do you use or need to be able to interpret standard deviations?

19. Do you need to be able to interpret Wechsler Scales?

20. Do you have any recommendations concerning the teaching of the course in Diagnostic and Evaluative Procedures in terms of any content or other aspects?

Thank you very much for your help. Your comments will contribute to the quality of the course. We appreciate your time and thoughts. (Be sure to be enthusiastic in expressing your appreciation. They did you a favor.)

Analysis of Covariance Report

Page	1
Database	C:\WPDOCS\CONFS\MSERA\MSERA97\MSERA97A.S0
Time/Date	02:58:03 10-27-1997
Response	Posttest

Expected Mean Squares Section

Source Term	DF	Term Fixed?	Denominator Term	Expected Mean Square
A (Group E=1, T=2)	1	Yes	S(A)	S+sA
S(A)	140	No		S

Note: Expected Mean Squares are for the balanced cell-frequency case.

Analysis of Variance Table

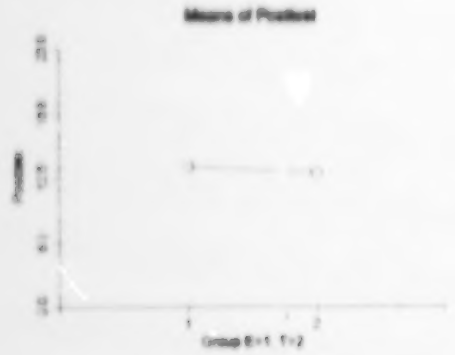
Source Term	DF	Sum of Squares	Mean Square	F-Ratio	Prob Level	Power (Alpha=0.05)
X(Pretest)	1	359.8284	359.8284	44.60	0.000000*	0.999998
A (Group E=1, T=2)	1	11.03386	11.03386	1.37	0.244100	0.212094
S	140	1128.99	8.064211			
Total (Adjusted)	142	1489.864				
Total	143					

* Term significant at alpha = 0.05

Means and Standard Error Section

Term	Count	Mean	Standard Error
All	143	13.26816	
A: Group E=1, T=2			
1	78	13.54918	0.321539
2	65	12.98714	0.3522283

Plots Section



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